

CLAIMS

1. A wound dressing material for controlled activation of a wound healing therapeutic compound in the presence of a protease enzyme in a wound fluid, the
5 material comprising:
 - a medically acceptable polymer;
 - a wound healing therapeutic agent;
 - an inhibitor of the protease enzyme; and
 - a linker group which is cleavable by the protease enzyme,
- 10 wherein the activities of both the wound healing therapeutic agent and the inhibitor are increased by contacting the wound dressing material with a wound fluid containing the protease enzyme.
2. A wound dressing material according to claim 1, wherein the wound healing
15 therapeutic agent and the inhibitor are dispersed in a matrix of the medically acceptable polymer, and the polymer comprises the linker group.
3. A wound dressing material according to claim 2, wherein the polymer is cross-linked by the linker group.
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4. A wound dressing material according to any preceding claim, wherein the wound healing therapeutic agent and/or the inhibitor are conjugated to the medically acceptable polymer by the linker group.
- 25 5. A wound dressing material according to any preceding claim, wherein the wound healing therapeutic agent is conjugated to the inhibitor by the linker group.
6. A wound dressing material according to claim 1 wherein elevated levels of the enzyme are associated with pain, wound infection or wound chronicity.
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7. A wound dressing material according to any preceding claim, wherein the enzyme is a protease, and the linker group comprises an oligopeptidic sequence which is a substrate for the protease.

8. A wound dressing material according to claim 7, wherein the protease is elastase and wherein the oligopeptidic sequence comprises or consists of lys-gly-ala-ala-ala-lys -Ala-Ala-Ala-, Ala-Ala-Pro-Val, Ala-Ala-Pro-Leu, Ala-Ala-Pro-Phe,
5 Ala-Ala-Pro-Ala or Ala-Tyr-Leu-Val.
9. A wound dressing material according to claim 7, wherein the protease is a matrix metalloproteinase and wherein the oligopeptidic sequence comprises or consists of -Gly-Pro-Y-Gly-Pro-Z-, -Gly-Pro-Leu-Gly-Pro-Z-, -Gly-Pro-Ile-Gly-Pro-Z-,
10 or-Ala-Pro-Gly-Leu-Z-, where Y and Z are amino acids.
10. A wound dressing material according to claim 7, wherein the protease is a collagenase and wherein the oligopeptidic sequence comprises or consists of -Pro-Leu-Gly-Pro-D-Arg-Z-, -ProLeu-Gly-Leu-Leu-Gly-Z-, -Pro-Gln-Gly-Ile-Ala-Gly-
15 Trp-, -Pro-Leu-Gly-Cys (Me)-His-, -Pro- Leu-Gly-Leu-Trp-Ala-, -Pro-Leu-Ala-Leu-Trp-Ala-Arg-, or-Pro-Leu-Ala-Tyr-Trp-Ala-Arg-, where Z is an amino acid.
11. A wound dressing material according to claim 7, wherein the protease is a gelatinase and wherein the oligopeptidic sequence comprises or consists of -Pro-
20 LeuGly-Met-Trp-Ser-Arg-.
12. A wound dressing material according to claim 7, wherein the protease is thrombin and wherein the oligopeptidic sequence comprises or consists of -Gly-Arg-Gly-Asp-, -Gly-Gly-Arg-, -Gly-Arg-Gly-Asp-Asn-Pro-, -Gly-Arg-Gly-Asp-Ser-,
25 Gly-Arg-Gly-Asp-Ser-Pro-Lys-, -Gly-Pro-Arg-, -Val-Pro-Arg-, or-Phe-Val-Arg-.
13. A wound dressing material according to claim 7, wherein the protease is stromelysin and wherein the oligopeptidic sequence comprises or consists of -Pro-TyrAla-Tyr-Trp-Met-Arg-.

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14. A wound dressing material according to any one of the preceding claims wherein the therapeutic agent is a reactive oxygen scavenger, an antimicrobial agent, a pain relieving agent, an antiseptic, an analgesic, or a local anaesthetic.

15. A wound dressing material according to claim 15, wherein the therapeutic agent comprises a reactive oxygen scavenger selected from the group consisting of antioxidant phenol derivatives, vitamin E, methyl peroxide antioxidants, 5 stilbenes, gallicatechins, ubiquinol, retinoids, vitamin A, vitamin C, N-acetyl cysteine, selenium and its compounds, zinc and its compounds, glutathione, carotenoids, papain, thioproline, albumin, chlorophyllin, antioxidant dyestuffs, and mixtures thereof.

10 16. A wound dressing material according to any preceding claim, wherein the enzyme inhibitor is selected from the group consisting of Tissue Inhibitor of Metalloproteinase (TIMP), 4-(2-aminoethyl)benzenesulfonyl fluoride AEBSF, antithrombin, (p-Amidinophenyl)methanesulfonyl fluoride APMSF, Aprotinin, diisopropylfluorophosphate DFP, phenyl methyl sulfonyl fluoride PMSF, Antipain, 15 Chymostatin, Leupeptin, Tosyl-lysine chloromethylketone TLCK, Tosyl-phenyl chloromethylketone TPCK, L-trans-epoxysuccinylleucylamido (4-guanidino) butane E-64, Amastatin, Bestatin, Diprotin, Ethylenediamine tetra-acetic acid (EDTA), pepstatin and mixtures thereof.

20 17. A wound dressing comprising a wound dressing material according to any preceding claim.

18. Use of a material according to any of claims 1 to 16 for the preparation of a dressing for use in the treatment of a wound.